

FIG. 1A

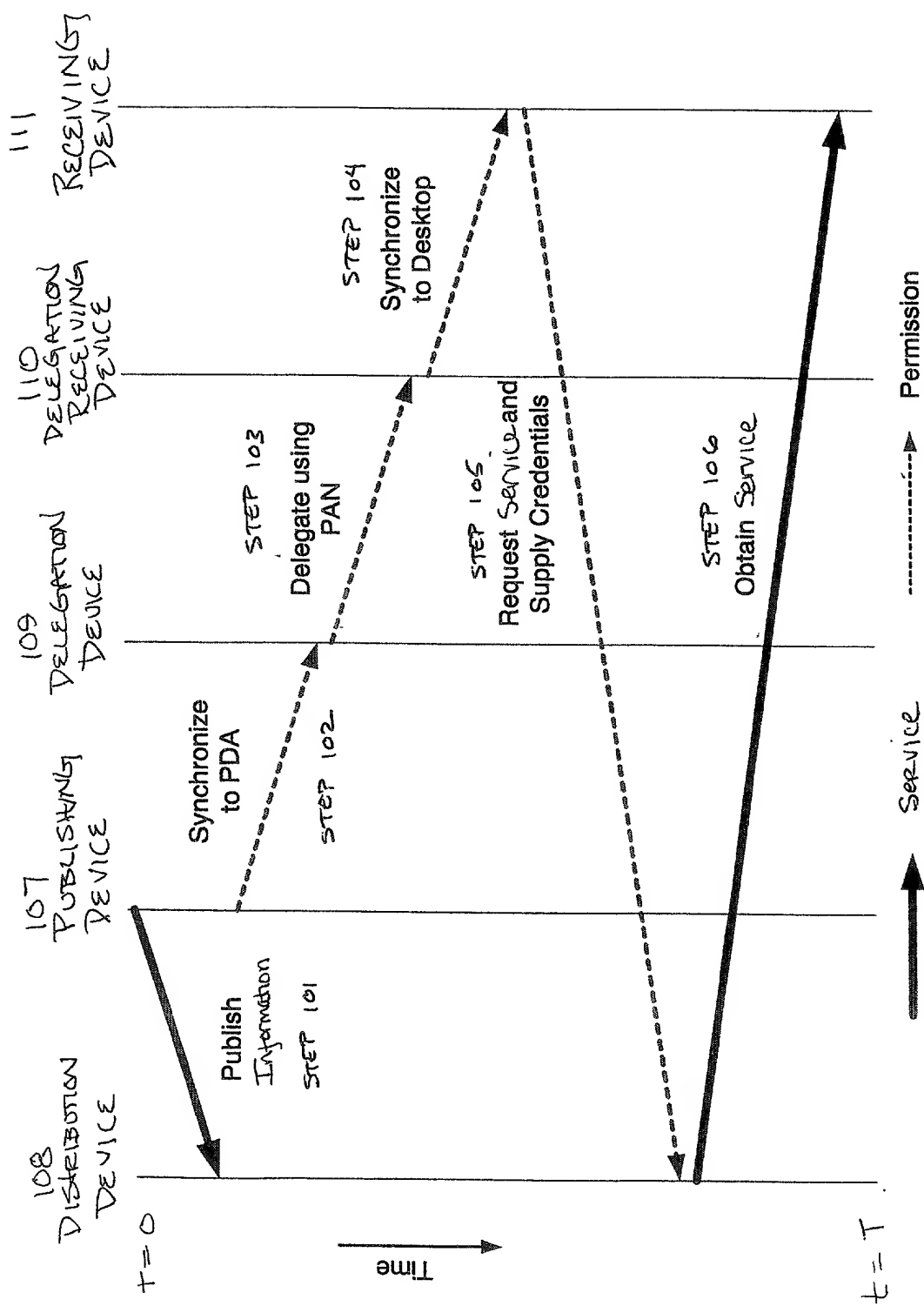
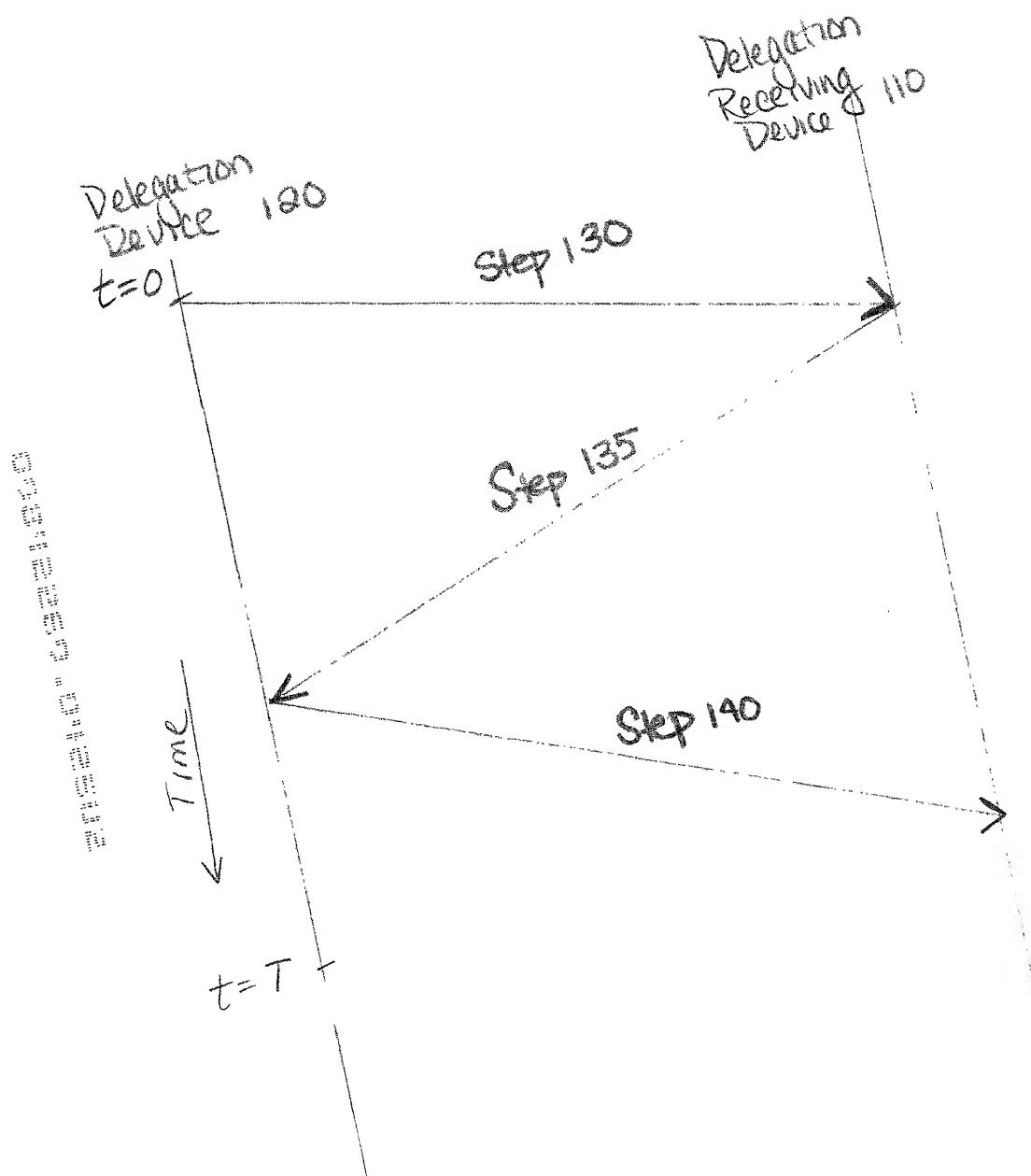


FIG. 1B



Data Structure Definitions in ASN.1

```
permissionChain ::= SEQUENCE OF permissionLink

permissionLink ::= SEQUENCE {
    permissionLinkComponent permissionLinkComponent,
    Signature OCTET STRING
}

permissionLinkComponent ::= SEQUENCE {
    Name OCTET STRING,
    Uri OCTET STRING,
    Description OCTET STRING,
    Note OCTET STRING,
    Version INTEGER,
    Src_p INTEGER,
    Src_q INTEGER,
    Src_g INTEGER,
    Src_pub INTEGER,
    Src_x509cert OCTET STRING,
    Src_email OCTET STRING,
    Subj_p INTEGER,
    Subj_q INTEGER,
    Subj_g INTEGER,
    Subj_pub INTEGER,
    Subj_x509cert OCTET STRING,
    Subj_email OCTET STRING,
    Delegate BOOLEAN,
    Read BOOLEAN,
    Write BOOLEAN,
    validFrom GeneralizedTime,
    validTo GeneralizedTime
}
```

FIG. 1C

SIG 4 content 5

CHAIN 1	
LINK 2	SIG 4
LINK COMPONENT 3	

SIG 9 content 10

SIG 4 content 5

CHAIN 6	
LINK 2	SIG 4
LINK COMPONENT 3	
LINK 7	SIG 9
LINK COMPONENT 8	
SIG 9	

SIG 14 content 15

SIG 9 content 10

SIG 4 content 5

CHAIN 11	
LINK 2	SIG 4
LINK COMPONENT 3	
LINK 7	SIG 9
LINK COMPONENT 8	
LINK 12	SIG 14
LINK COMPONENT 13	

FIG. 1D

System Overview

FIG. 2A

200

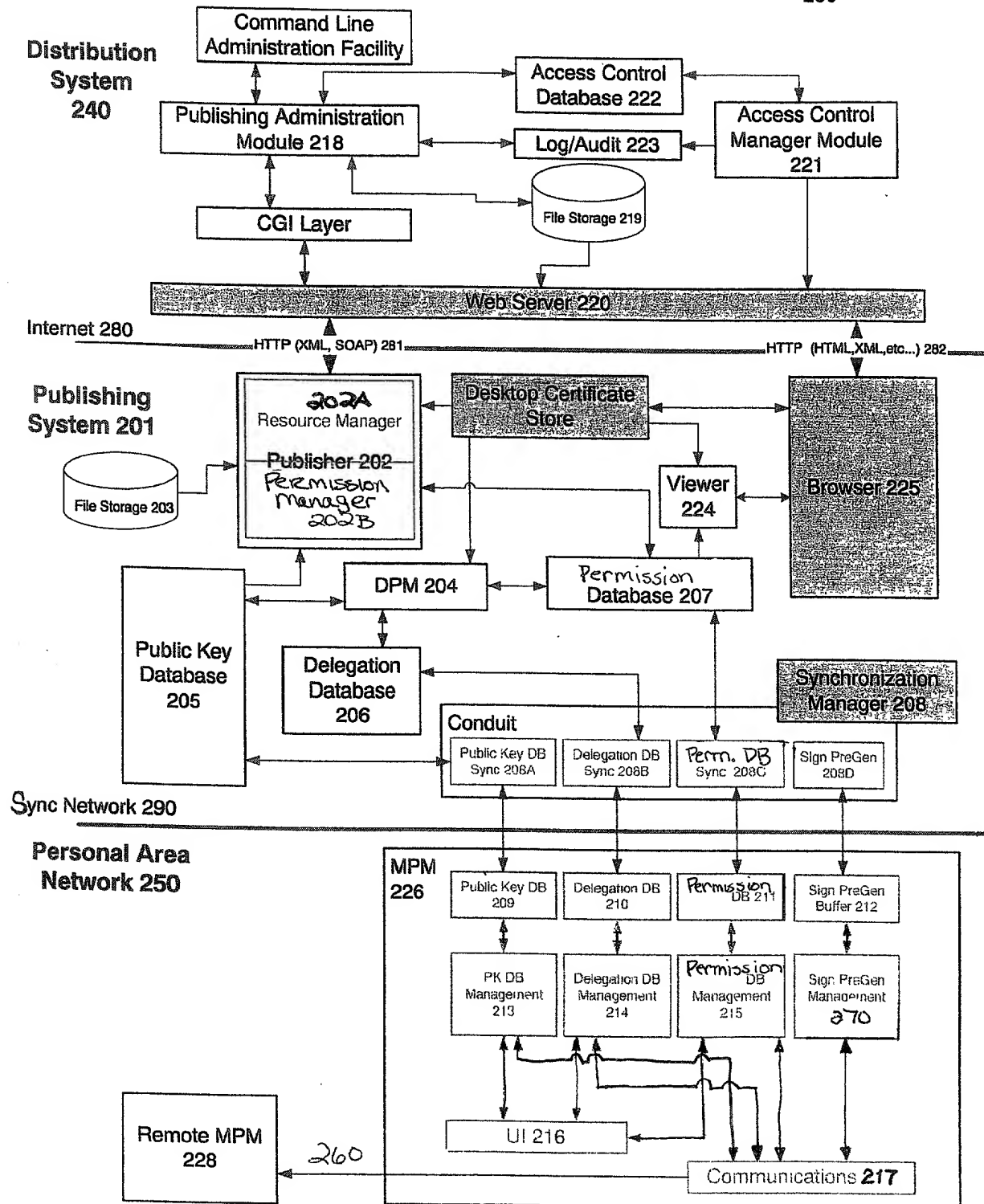


FIG. 2B

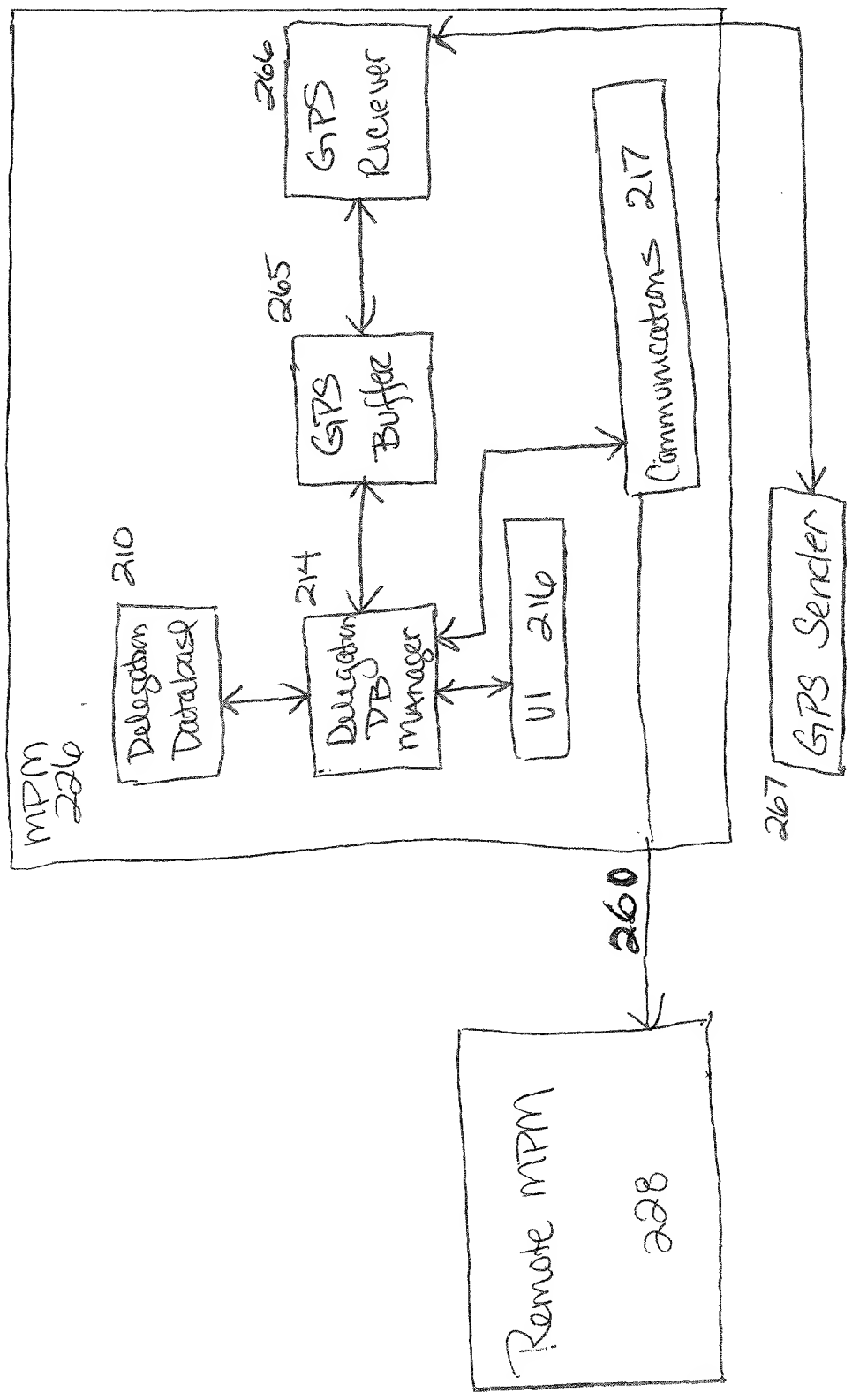
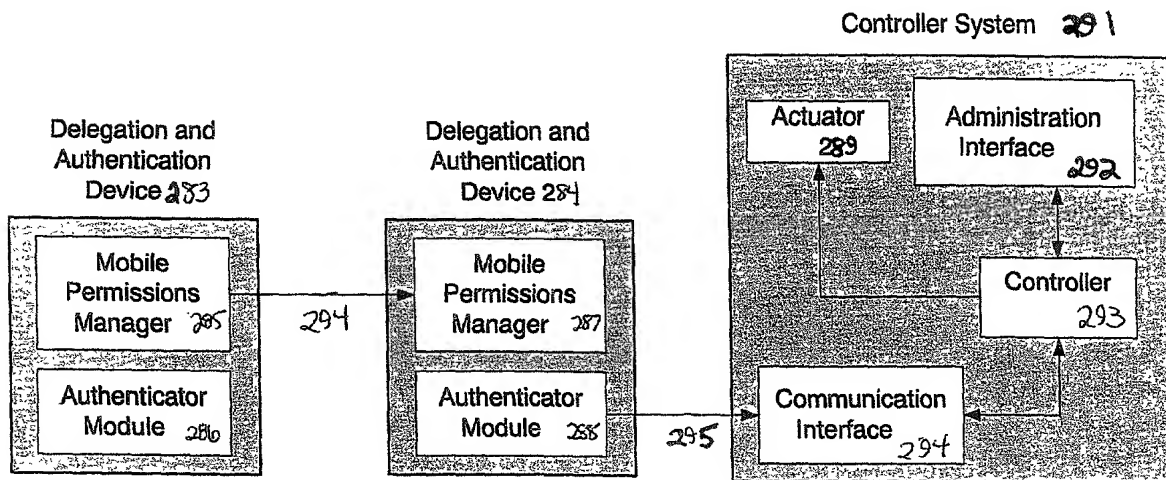


FIG. 2C



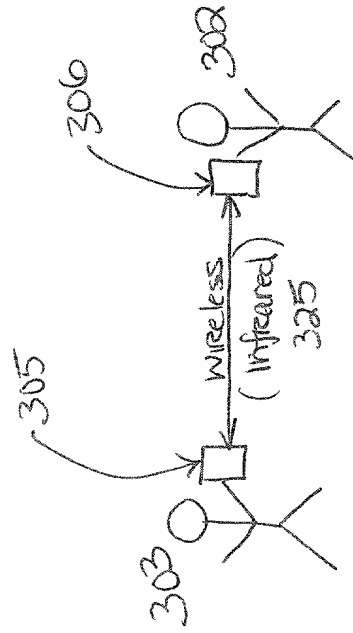
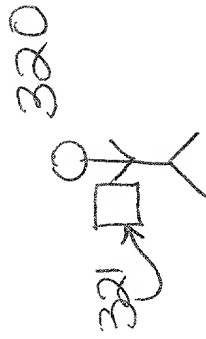


Fig. 3A

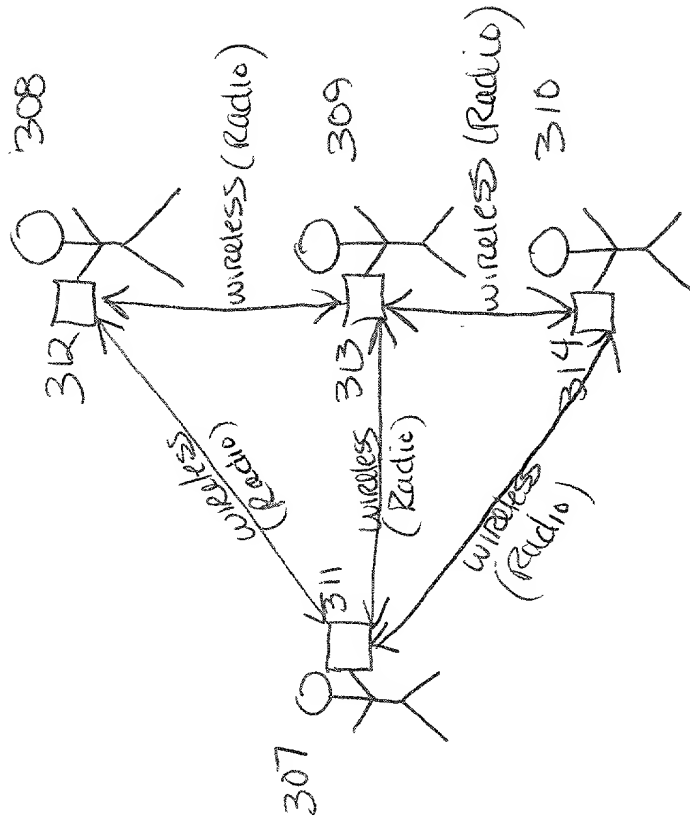


Fig. 3B

FIG. 4

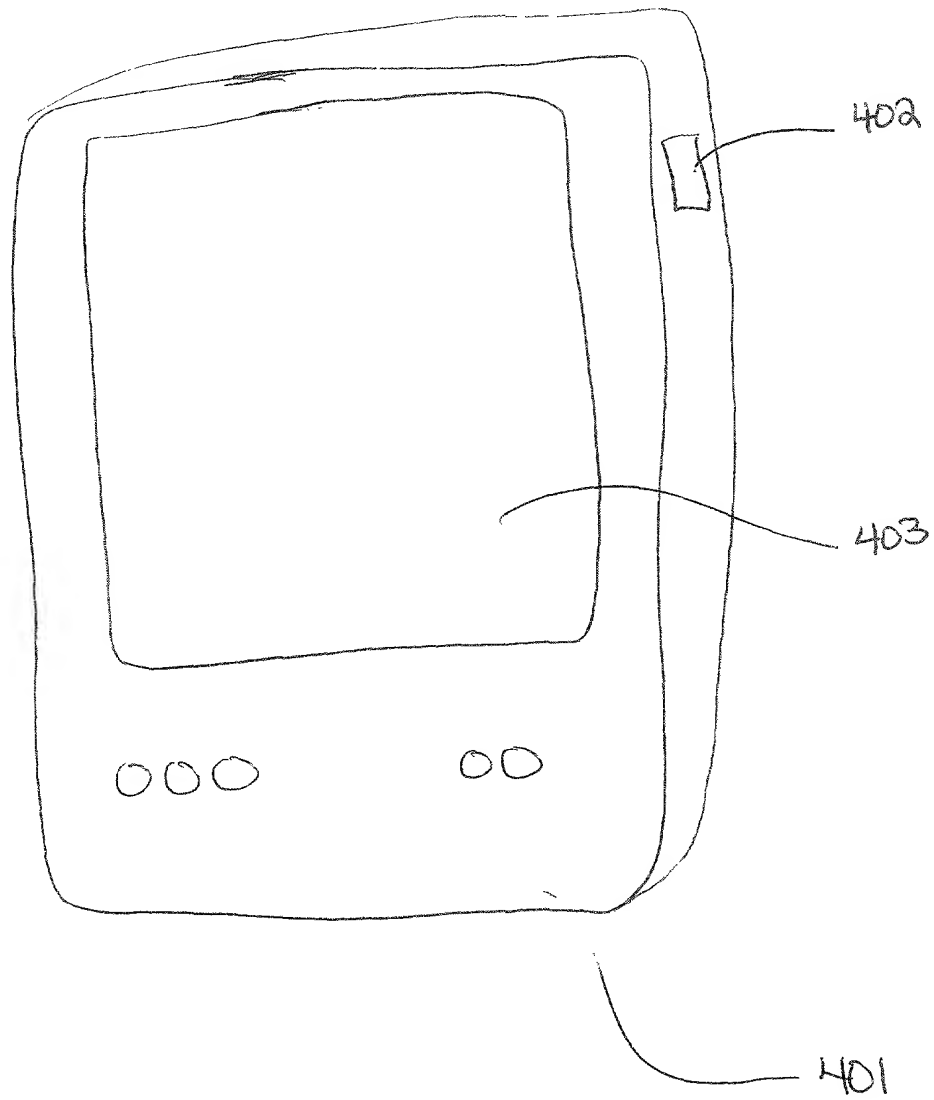


FIG. 5

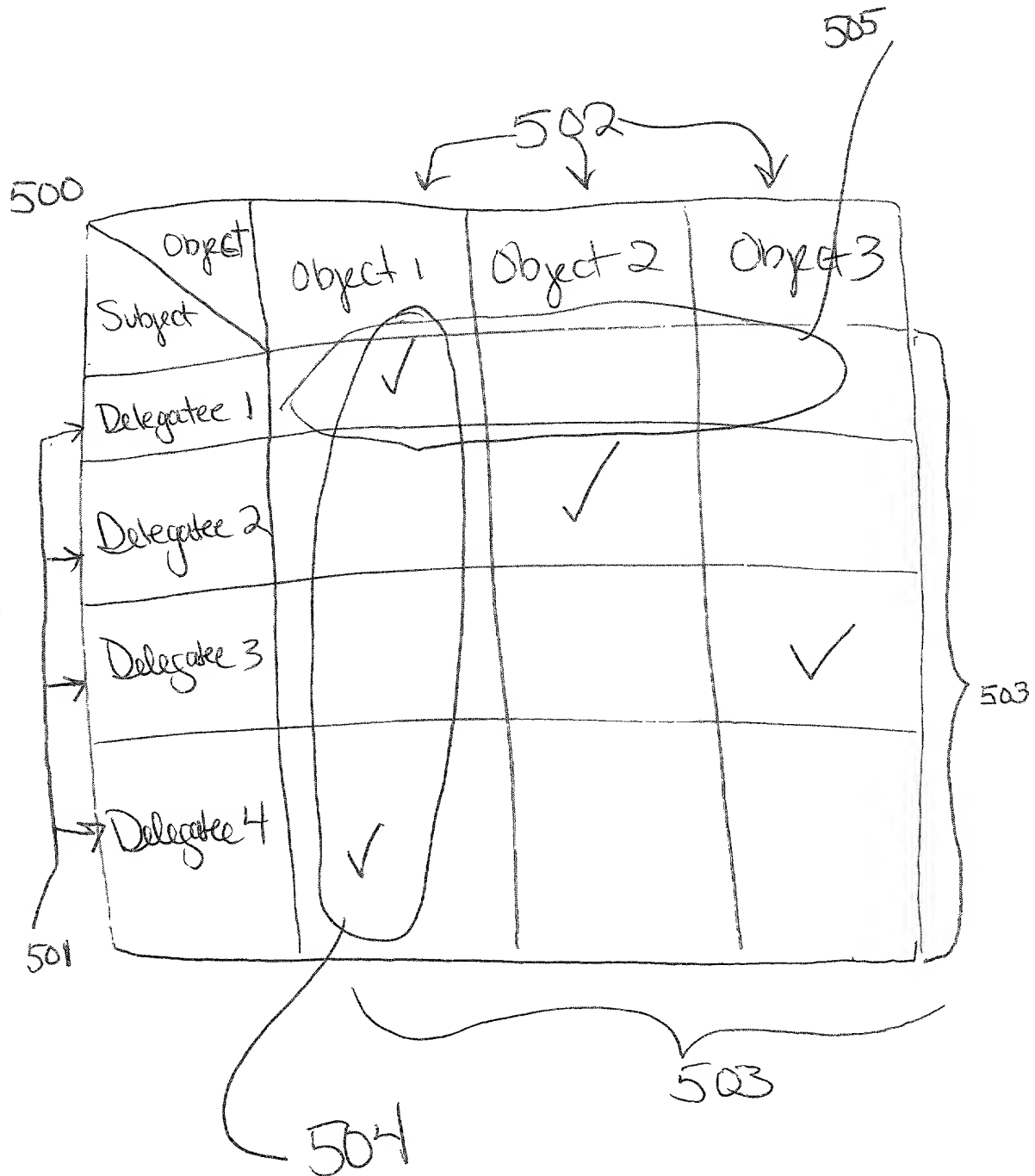
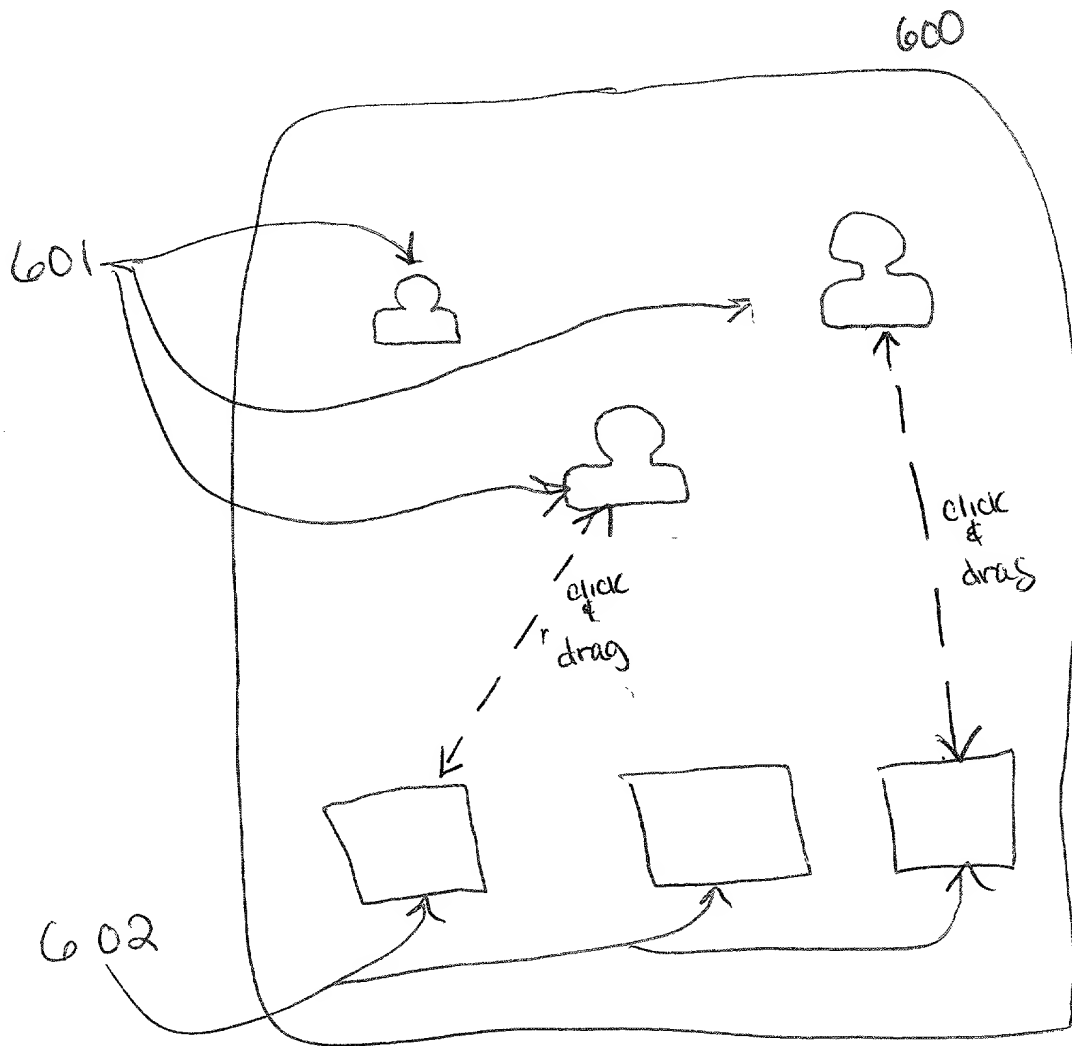


Fig. 4



Sending Permission as part of a header within an HTTP request:
(see <http://www.ietf.org/rfc/rfc2616.txt>).

```
GET /resource/ HTTP/1.1
Accept: image/gif, image/x-xbitmap, image/jpeg, image/pjpeg,
application/vnd.ms-powerpoint, application/vnd.ms-excel,
application/msword, */*
Accept-Language: en-us
Accept-Encoding: gzip, deflate
User-Agent: Mozilla/4.0 (compatible; MSIE 5.01; Windows NT 5.0)
Vchain: 50U+F61olMMJzRmZs6QNRhx1UE3artX4ax56AJdJxYR7dzyPNglg+cwEOzzjT+
v8ywbpyuugQvj1uZSSVDfkbje/C+NV8sLfp5d3eaTykzeP+siJxl7wg3njzn2mLOnRKrXw
WuX6gW3gr76zVuIz0ylwS9bZzSiu+ImN/SaHRS3eqBFPL7Ye0lJzin4jH8l046kLpiXB+O
CloFRqsCmy5/JCrgvR0lRw2rolg6uXgK8xKdybfSXPkJx4wlA0d9GdGAqRycOGFoXtyzps
+bASvdt2UJMsCXAKTw5bi+sUzuTbeX2xPJwDsPvuevICZHVgwnqJemvVUrHlDdhnMzYzF
ZfTqeZ6sYAZCvsAiCYghRB6fK9JJV/vj9CzF1vfyFPfYYH75ONHjMdr5qrVbSm4hK2GFZ
IVPnyxYHwTafKHhbU2aQ5KFZbBGMwIikfBRMvfsqz3hpKa5Pd+NZELIwQ4FWlWgrIzL+jw
Le1Cfdk2V4SntsK+CFxBVGbU6dWpQYe2x0Bjat5yjbgyfXdz/vXfNxjHoAiUYwt4ZNwK0+
UG78+Elrtw2UoIUPuQoCpCXh9EMeaACc7gSKY2KfuY10FeCHZ00c16a4M82DUtE6JhrX6U
fR08r9QmxVnZu0/MW2vbWNS6rCUvsw78zWpChy3V1lxbTyofETq9WofZ3u+bomL8WgchTd
/QPyHMaky37tXEhrjZxUkgJtI0oA12kVaTDERIwBnhQYM3mzp48n8wCq8qH2JP78DSOQwC
HMolJQPmjfaOxaCR5wE9mhJGHjtTOpXx3GkLNLNuZYq7tbxYznGNJ2VgwUPpCQppohcWmF
B17790cTc59zt9kV6A3MyeI/1ZCP5iW+VjPEa6h5CWhqHDT3mvDXSAJ8Wx66XiIEJmtzil
1Dpnt0phJpCDAPyM2X02bJGrPnimSbUsaELQWdMmtUyczy5TDI1lpqjKMNUlytlHdmN2jly
2+hHplkzgxXKHi1I/JtC97X2GBbm7nlUnICG6sAbxq6lBHX5sNs1TzWChjYhtFlMuCezT
Umf1LBgGPgh6Uv3oyUVoasRmsKi6qbqweDdxXfZD3uFR/iJNLUzwnt3/PJwtpJPjJHJ+Sia
/hkB9+alMZxfSkMQaBpAE7/BfzRHs+09fDTL+kBFdO0w0fvkTo9AlfVF99wiAJ0hZt7q+e
GWkPi5SRO+9/T710r7wNvC9NELRfsziq/v+8LM179yjjCm0chAZTv09iA8i28gQotzjdFX
1fE3vL0wmrP/6lGSfqZhWc2Ho/m7FmqA9pJQVCRsVXXQOSWAZdPC3a75Jxyoa8hHDxgluK
RaAF1xQboHeRlZ9GQHoia9ucQORhrbIu0S2Oafj99QjmszP3gQ64Pw+EakfS+lYQYbauY9
Z+8bRf+G8JnhRZIVcyu5ylRW74goguqs6BSf6NcuC3rBJhf30xn15l/a8SraFtzUR4rv+e
qjQyE=
Connection: Keep-Alive
Host: www.websitexyz.com
HTTP/1.0 200 OK
Content-Length: 16485
Content-Type: text/html
<html><head><title>WebsiteXYZ</title>
...
```

FIG. 7.

Sending the permission as part of a "cookie" within an HTTP request
(see <http://www.ietf.org/rfc/rfc2616.txt> and <http://www.ietf.org/rfc/rfc2109.txt>).

```
GET /resource/ HTTP/1.1
Accept: image/gif, image/x-xbitmap, image/jpeg, image/pjpeg,
application/vnd.ms-powerpoint, application/vnd.ms-excel,
application/msword, */*
Accept-Language: en-us
Accept-Encoding: gzip, deflate
User-Agent: Mozilla/4.0 (compatible; MSIE 5.01; Windows NT 5.0)
Cookie: Vchain=50U+F61olMMJzRmZs6QNRhx1UE3artX4ax56AJdJxYR7dzyPNglg+cw
EOzzjT+v8ywbpyuugQvj1uZSSVdfkbje/C+NV8sLfp5d3eaTykzeP+siJxl7wg3njzn2mL
OnRKrXwWuX6gW3gR76zVuIz0ylwS9bZzSiu+ImN/SaHRS3eqBFPL7Ye0lJzin4jH8l046k
LpiXB+OCloFRqsCmy5/JCrgvR0lRw2rolg6uXgK8xKdybfSXPkJx4w1A0d9GdGAqRycOGF
oXtyzpS+bASvdt2UJMssCXAKTw5bi+sUzuTbeX2xPJwDsPvuevICZHVgwnqJemvVUrH1DD
hnMzYzFZfTqeZ6sYAZCvsAiCYghRB6fK9JJV/vj9CzFlvfyFPfYYH75ONHjMdDr5qrVbSm
4hK2GFZIVPnyxYHwTafKHhbU2aQ5KFZbBGMwIikfBRMVfsqz3hpKa5Pd+NZELIwQ4FWlWg
rIzL+jwLe1CfDk2V4SntsK+CFxBVGbU6dWpQYe2x0Bjat5yjbgyfXdz/vXfNxjHoAiUYwt
4ZNwK0+UG78+Elrtw2UoIUPuQoCpCXh9EMeaACc7gSKY2KfuY10FeCHZ00c16a4M82DutE
6JhrX6UfR08r9QmxVnZu0/MW2vbWNS6rCUvsw78zWpChy3V1lbXTyofETq9WofZ3u+bomL
8WgchTd/QPyHMaky37tXEhrjZxUkgJtI0oA12kVaTDERIwBnhQYM3mzp48n8wCq8qh2JP7
8DSOQwCHMolJQPmjfaOxaCR5wE9mhJGHjtTOpXx3GkLNlNuZYq7tbxYznGNJ2VgwUPpCQp
pohcWmFB1779OcTc59zt9kV6A3MyeI/1ZCP5iW+VjPEa6h5CWhqHDT3mvDXSAJ8Wx66XiI
EJmtzil1Dpnt0phJpCDAPyM2X02bJGrPnimSbUsaELQWdMmtUyczy5TDIlpqjKMNUlyt1H
dmN2jly2+hHplkzqxxXKhilI/JtC97X2GBbm7nlUnICG6sAbxq61BHX5sNs1TzWChjYhtF
lMuCezTUmf1LBgGPgh6Uv3oyUVOasRmsKi6qbqweDdxXfZD3uFR/iJNLUzwnt3/PJwtpJP
JHJ+SIa/hkB9+alMZxfSkMQaBpAE7/BfzRHs+09fDTL+kBFdO0w0fvkTo9AlfVF99wiAJ0
hZt7q+eGWkPi5SRO+9/T710r7wNvC9NELRfsziq/v+8LM179yjjCm0chAZTv09iA8i28gQ
otzjdFX1fE3vL0wmrP/6lGSfqZhWc2Ho/m7FmqA9pJQVCRsVXXQOSWAZdPC3a75Jxyoa8h
HDxgluKRaf1xQboHeRlZ9GQHoiA9ucQORhrbIu0S2Oafj99QjmszP3gQ64Pw+EakfS+lY
QYbauY9Z+8bRf+G8JnhRZlvcyu5y1RW74goguqs6BSf6NcuC3rBJhf30xn15l/a8SraFtz
UR4rv+eqjQyE=
Connection: Keep-Alive
Host: www.websitexyz.com
HTTP/1.0 200 OK
Content-Length: 16485
Content-Type: text/html
<html><head><title>WebsiteXYZ</title>
...
```

FIG. 8

Sending the permissions as part of a URL

http://www.websitexyz.com/resource/?Vchain=50U+F61olMMJzRmZs6QNRhx1UE3a
rtX4ax56AJdJxYR7dzyPNglg+cwEOzzjT+v8ywbpyuugQvjluZSSVdfkbje/C+NV8sLfp5d
3eaTykzeP+siJxl7wg3njzn2mLOnRKrXwWuX6gW3gR76zVuIz0y1ws9bZzSiu+ImN/SaHRS
3eqBFPL7Ye0lJzin4jH8l046kLpiXB+OCloFRqsCmy5/JCrgvR0lRw2rolg6uXgK8xKdybf
SXPkJx4w1A0d9GdGAqRycOGFoXtyzps+bASvdt2UJMssCXAKTw5bi+sUzuTbeX2xPJwDsPv
uevICZHVGwnqJemvVUrH1DDhnMzYzFZfTqeZ6sYAZCvsAiCYghRB6fK9JJV/vj9CzF1vfyF
PfYYH75ONHjMdDr5qrVbSm4hK2GFZIVPnyxYHwTafKHhbU2aQ5KFZbBGMwIikfBRMVfsqz3
hpKa5Pd+NZELIwQ4FWlWgrIzL+jwLe1CfDk2V4SntsK+CFxBVGbU6dWpQYe2x0Bjat5yjbq
YfXdz/vXfNxjHoAiUYwt4ZNwK0+UG78+Elrtw2UoIUPuQoCpCXh9EMeaACc7gSKY2KfuY10
FeCHZ00c16a4M82DutE6JhrX6Ufr08r9QmxVnZu0/MW2vbWNS6rCUvsw78zWpChy3V1lBxT
yofETq9WofZ3u+bomL8WgchTd/QPyHMaky37tXEhrjZxUkgJtI0oA12kVaTDERIwBnhQYM3
mzp48n8wCq8qH2JP78DSOQwCHMolJQPmjfaOxaCR5wE9mhJGHjtTOpXx3GkLNLNuZYq7tbx
YznGNJ2VgwUPpCQppohcWmFB17790cTc59zt9kV6A3MyeI/lZCP5iW+VjPEa6h5CWhqHDT3
mvDXSAJ8Wx66XiIEJmtzil1Dpnt0phJpCDAPyM2XO2bJGrPnimSbUsaELQWdMmtUyczy5TD
IlpgjKMNUlytlHdmN2jly2+hHplkzgxXKhlI/JtC97X2GBbm7nlUnICG6sAbxq6lBHX5s
NslTzWChjYhtFlMuCezTUmflLBgGPgh6Uv3oyUVoasRmsKi6qbqweDdxXfZD3uFR/iJNLUz
wnt3/PJwtPJpJHJ+SIa/hkB9+alMZXfSkMQaBpAE7/BfzRHs+09fDTL+kBfd00w0fvkTo9A
lfVF99wiAJ0hZt7q+eGWkPi5SRO+9/T710r7wNvC9NELRfsziq/v+8LM179yjjCm0chAZTv
09iA8i28gQotzjdFXlFE3vL0wmrP/6lGSfqZhWc2Ho/m7FmqA9pJQVCRsVXXQOSWAZdPC3a
75Jxyoa8hHDxgluKRaf1xQboHeRlZ9GQHoia9ucQORhrbIu0S2Oafj99QjmszP3gQ64Pw+
EakfS+lYQYbauY9Z+8bRf+G8JnhRZlvcyu5y1RW74goguqs6BSf6NcuC3rBJhf30xn15l/a
8SraFtzUR4rv+eqjQyE=

Fig. 9

Fig. 10

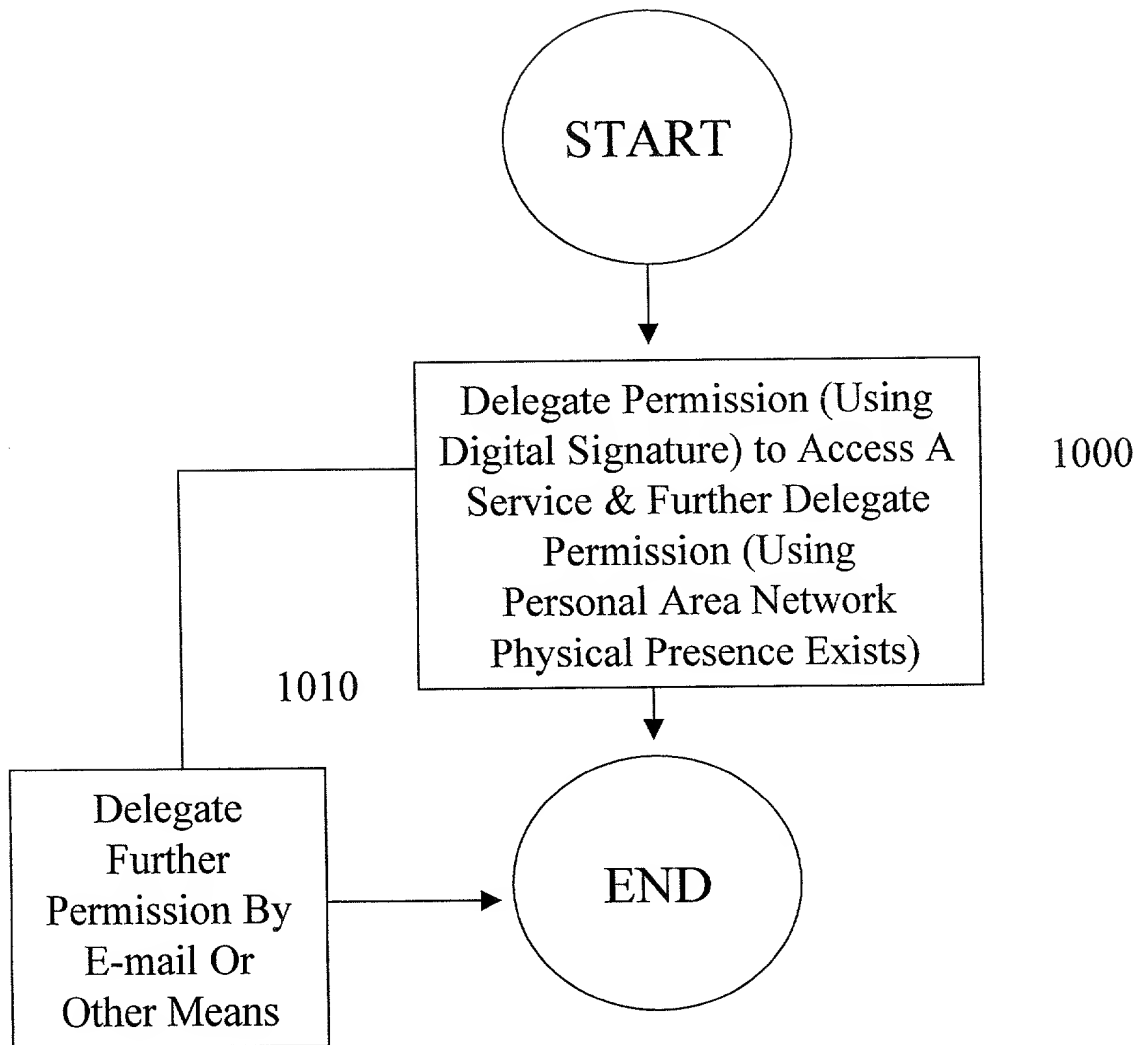


Fig. 11

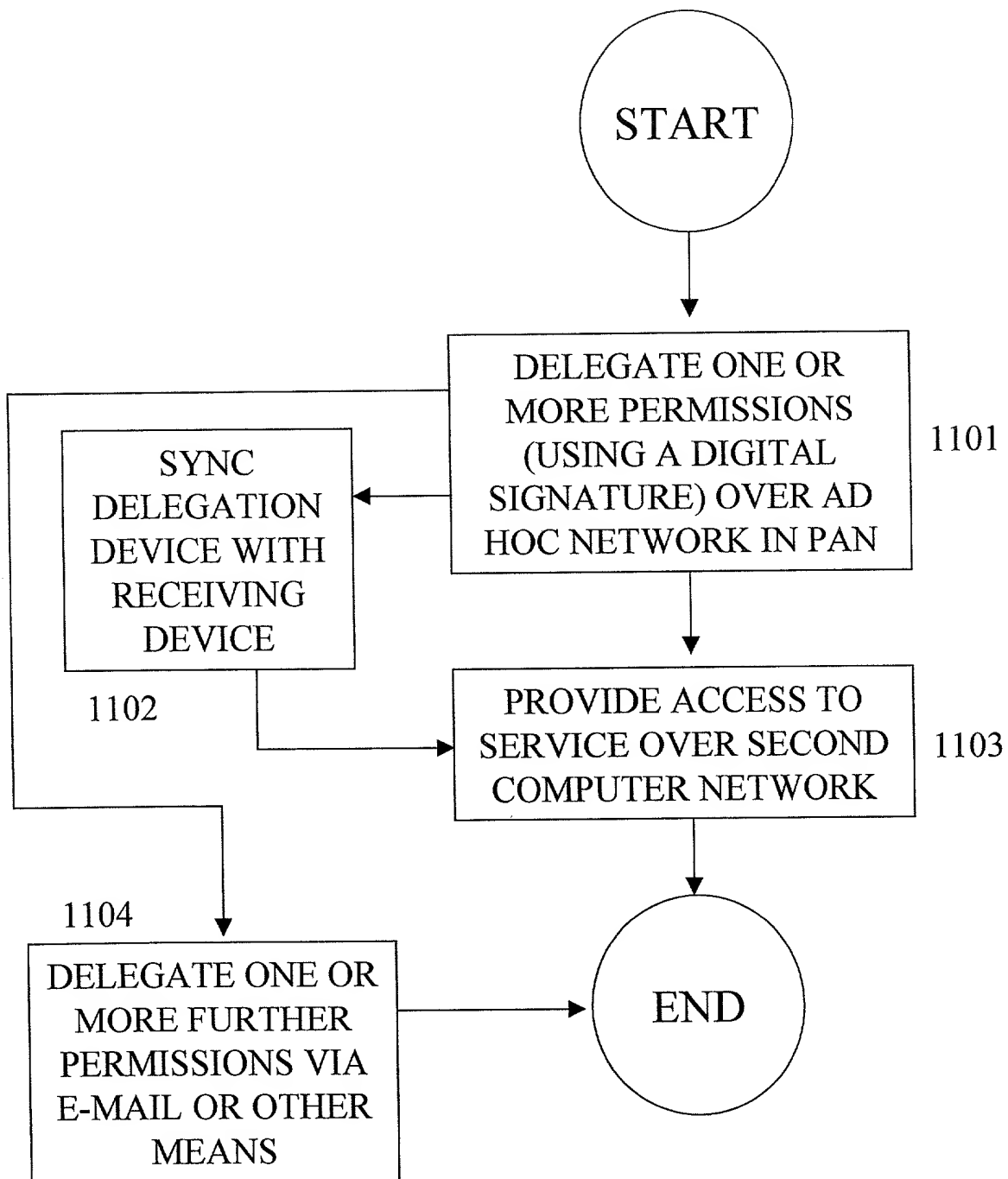


Fig. 12

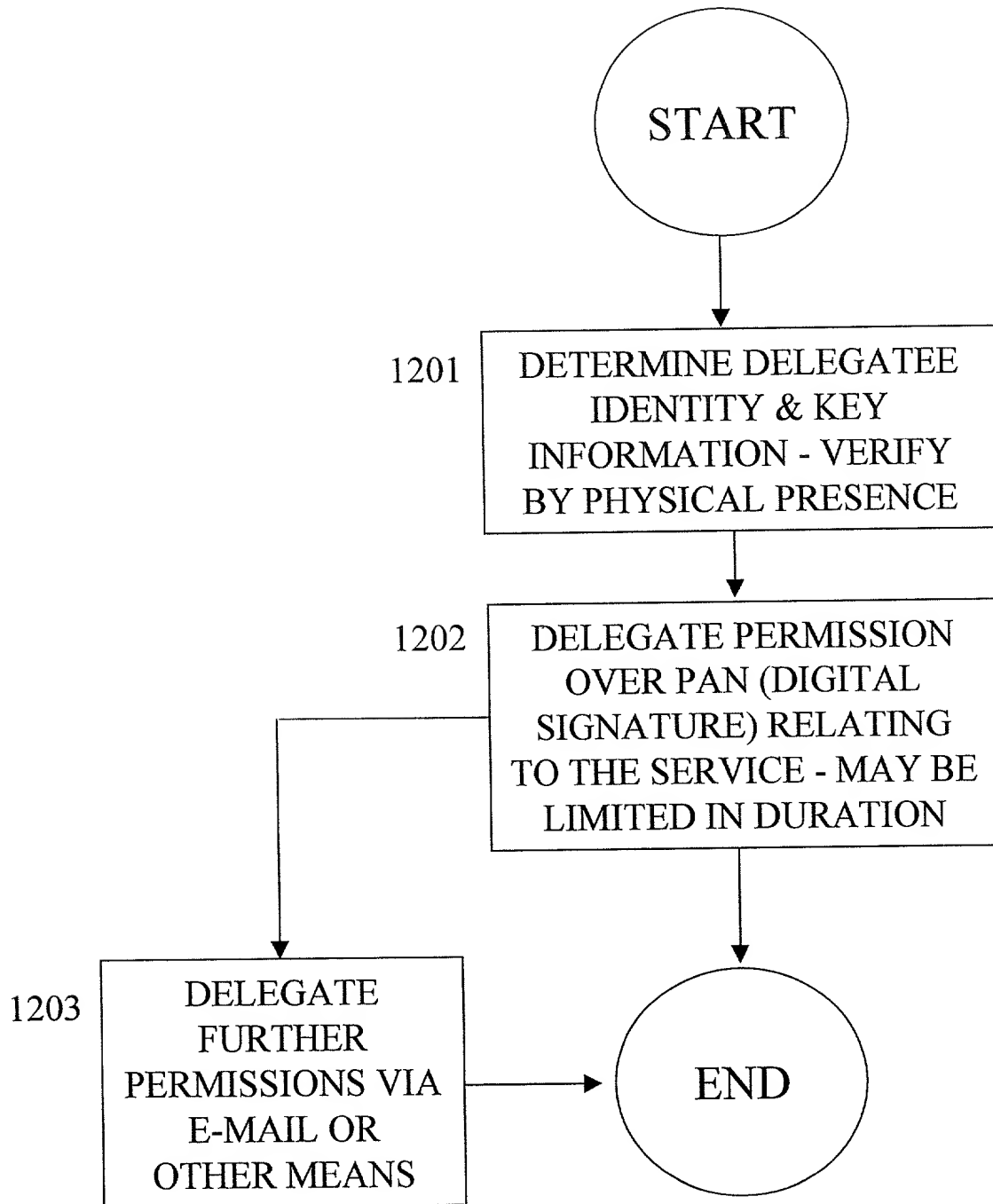


Fig. 13

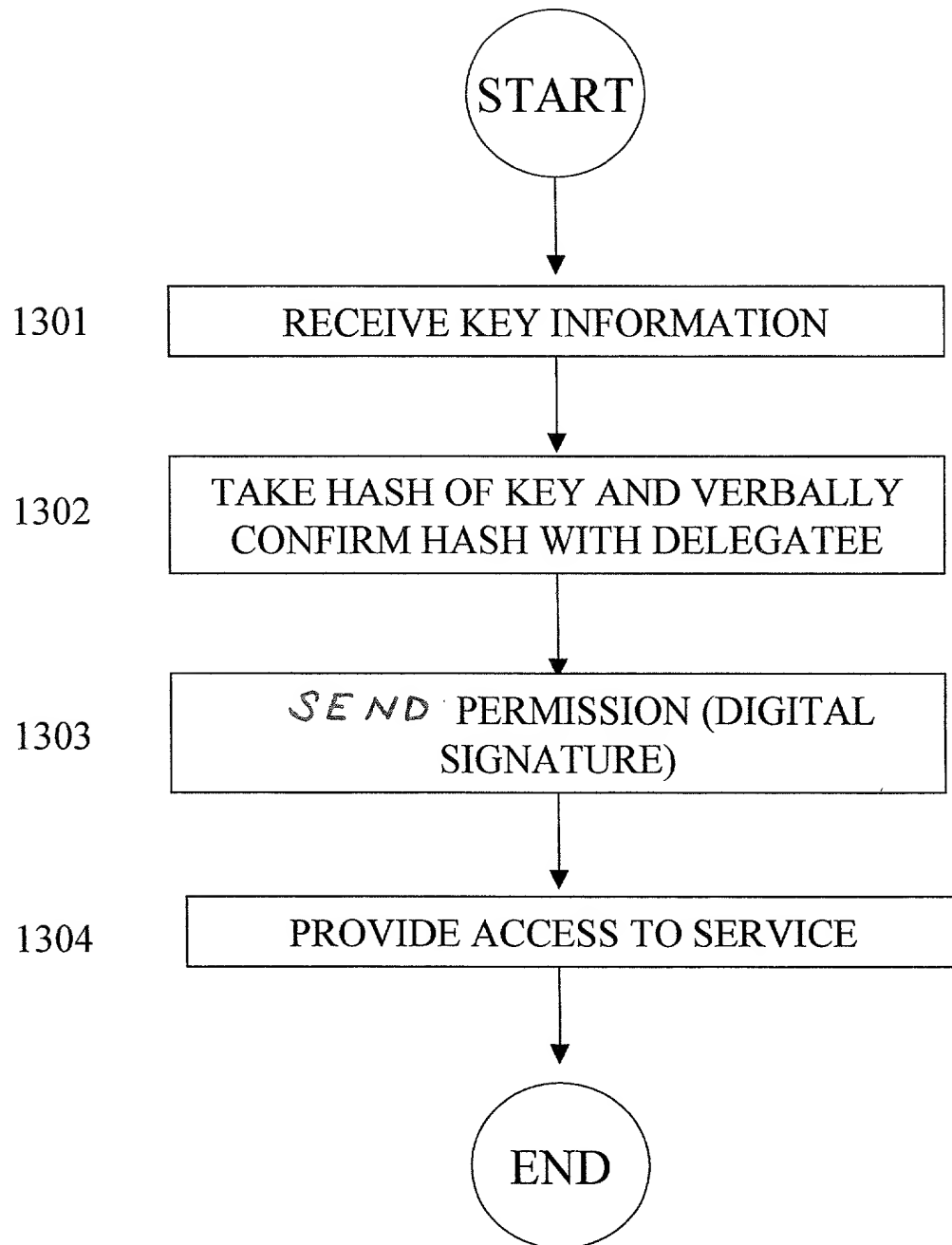


Fig. 14

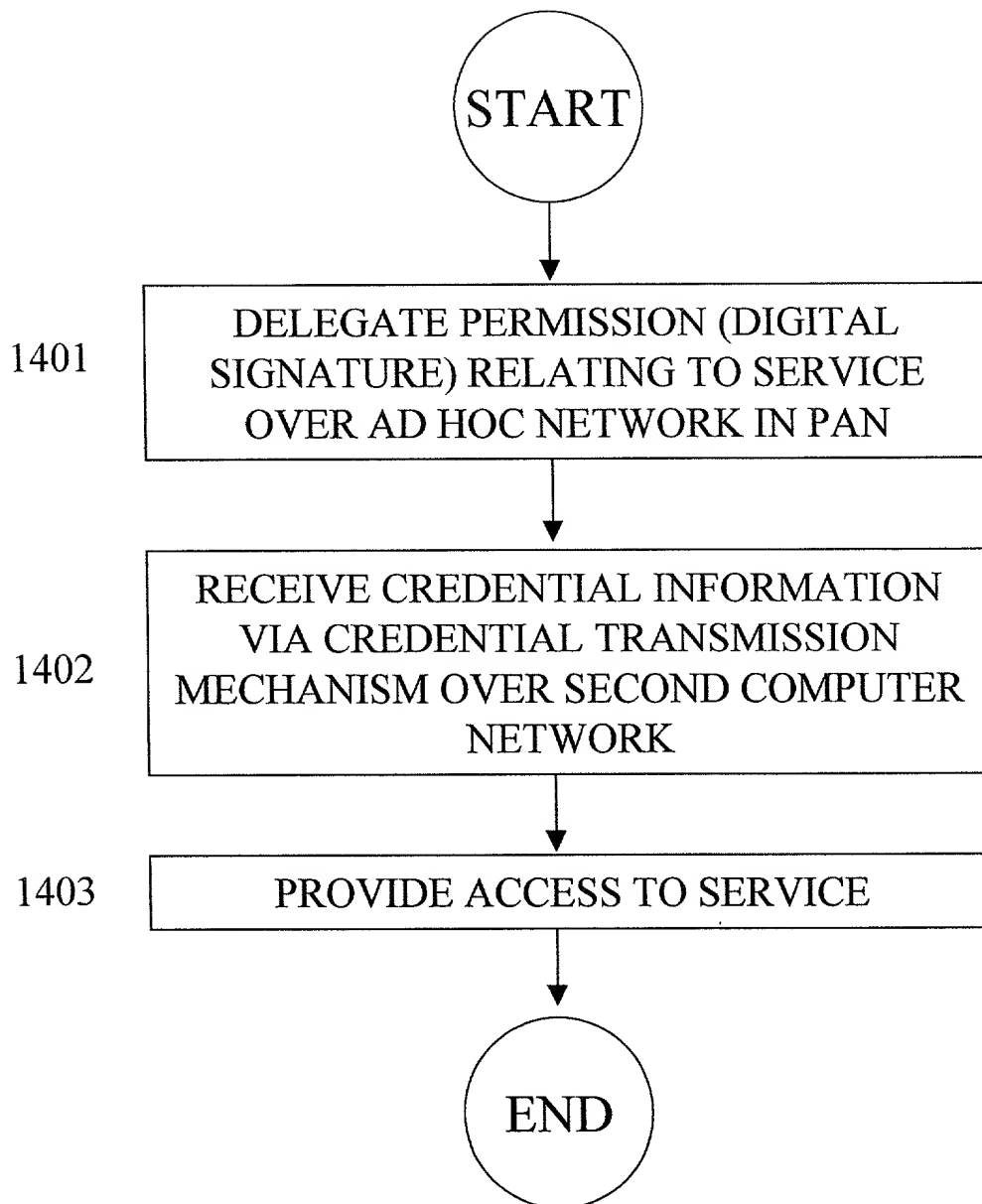


Fig. 15

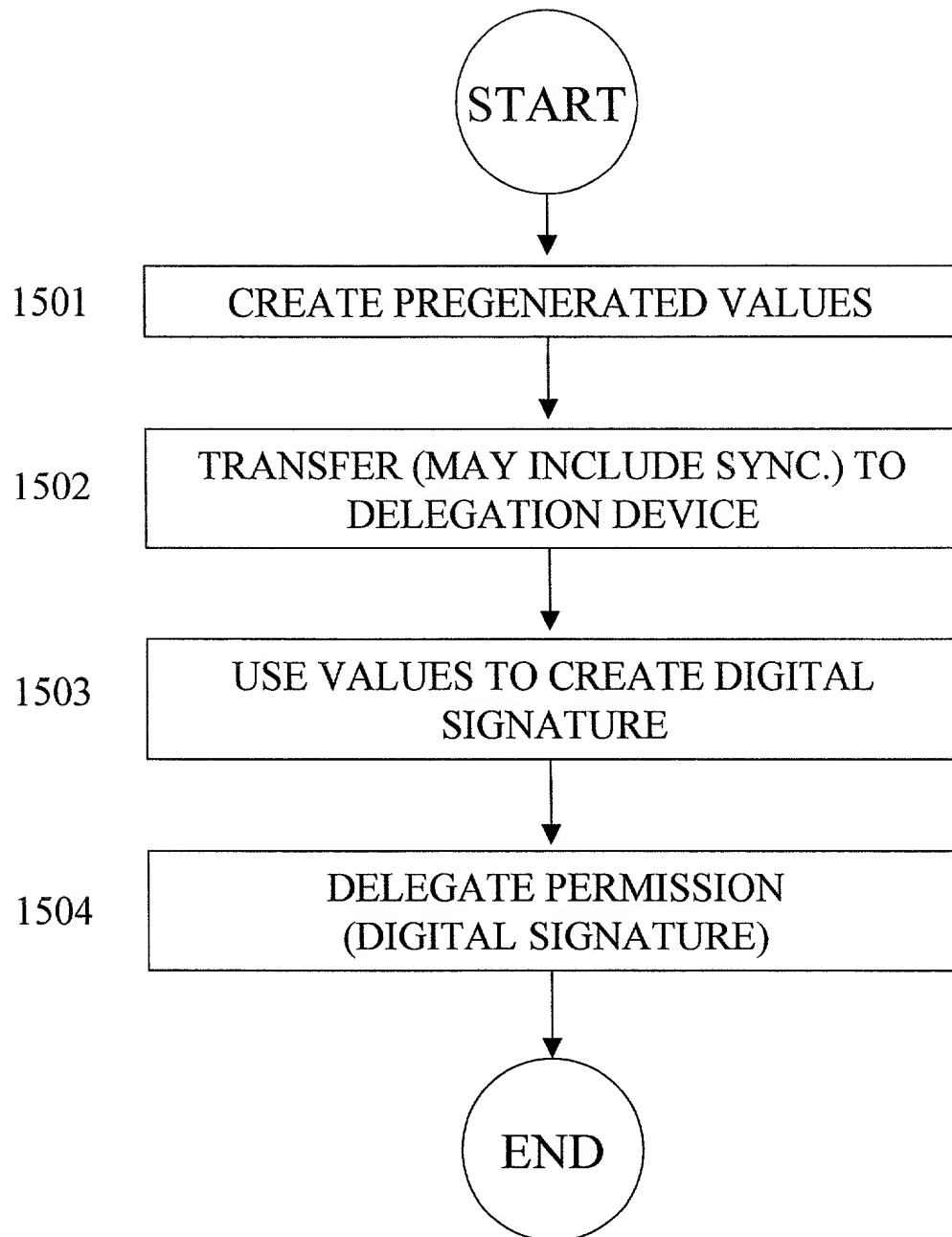


Fig. 16

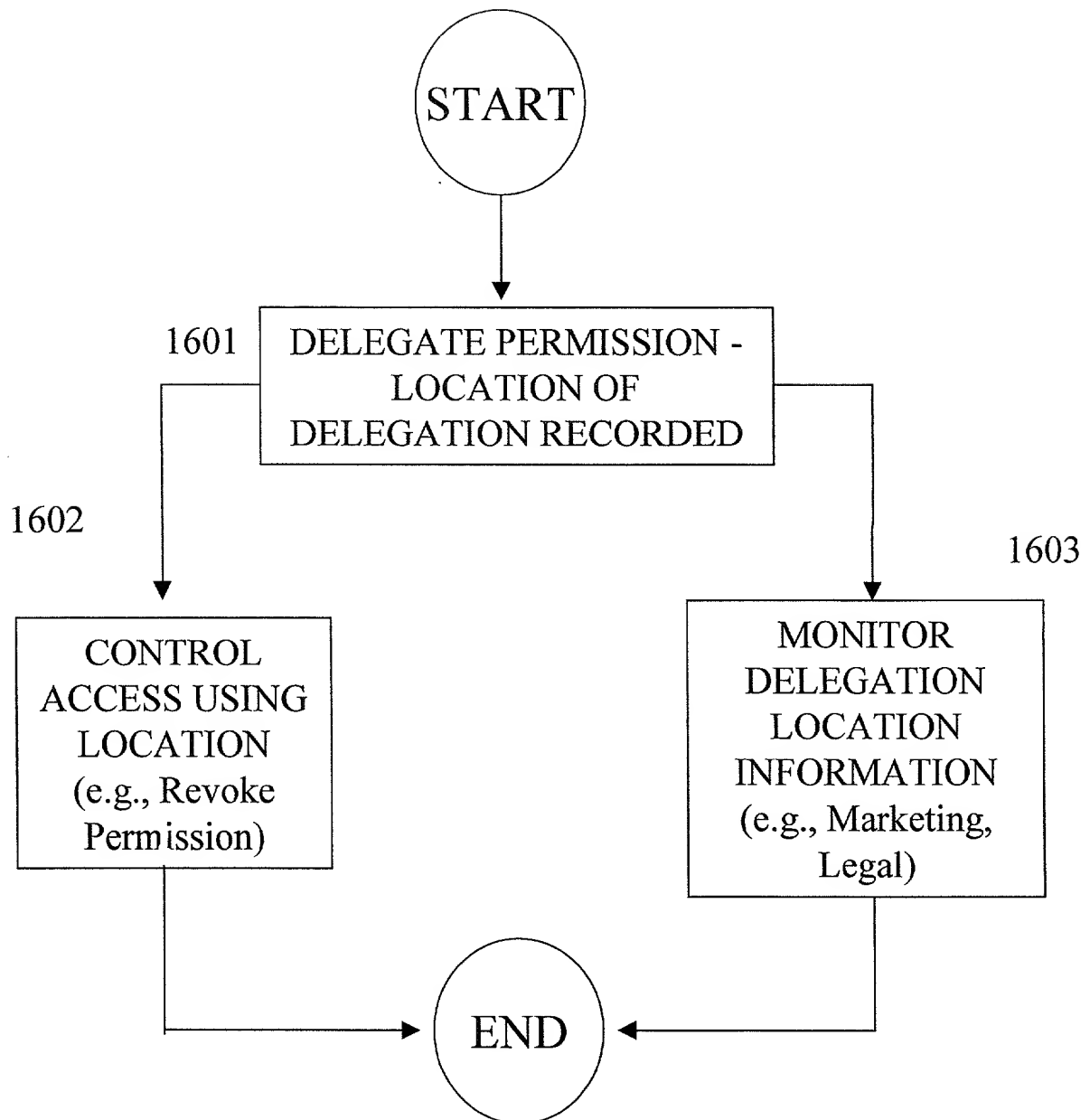


Fig. 17

